Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A power supply, comprising:

an output node operable to provide a regulated supply voltage;

a main-phase drive circuit operable to provide a main load current to the output node and having an on time and an off time that are ~~based on~~ determined by a feedback signal ~~that is related to~~ generated from the regulated supply voltage; and

a transient-phase drive circuit operable to provide a transient load current to the output node and having an on time and an off time that are ~~based on~~ determined by the same feedback signal and that are respectively less than the on and off times of the main-phase drive circuit.

2. (Original) The power supply of claim 1, further comprising a filter capacitor coupled to the output node.

3. (Previously Presented) The power supply of claim 1, further comprising a circuit coupled to the main-phase and transient-phase drive circuits and operable to pulse-width modulate the main-phase and transient-phase drive circuits in response to the feedback signal.

4. (Original) The power supply of claim 1 further comprising a circuit that is operable to activate the main-phase drive circuit when the regulated voltage strays from a first range and is operable to activate the transient-phase drive circuit when the regulated voltage strays from a second range that is greater than and includes the first range.

5. (Previously Presented) A power supply, comprising:

an output node operable to provide a regulated supply voltage;

a first main-phase drive circuit operable to provide a first main load current to the output node and having an on time and an off time;

a first transient-phase drive circuit operable to provide a first transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the first main-phase drive circuit;

a second main-phase drive circuit operable to provide a second main load current to the output node and having an on time and an off time; and

a second transient-phase drive circuit operable to provide a second transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the first and second main-phase drive circuits and the first transient-phase drive circuit.

6. (Previously Presented) The power supply of claim 1, further comprising:

a main filter inductor coupled between the main-phase drive circuit and the output node; and

a transient filter inductor coupled between the transient-phase drive circuit and the output node, the transient filter inductor having a smaller inductance than the main filter inductor.

7. (Currently Amended) A power supply, comprising:

an output node operable to provide a regulated supply voltage;

a feedback circuit operable to generate a feedback signal ~~in response to~~ from the regulated supply voltage;

a main-phase drive circuit operable to provide a main load current to the output node ~~in response to~~, the main load current determined by the feedback signal;

a transient-phase drive circuit operable to provide a transient load current to the output node ~~in response to~~, the transient load current determined by the same feedback signal;

a main-phase filter inductor having an inductance and coupled between the main-phase drive circuit and the output node; and

a transient-phase filter inductor coupled between the transient-phase drive circuit and the output node and having an inductance that is smaller than the inductance of the main-phase filter inductor.

8. (Original) The power supply of claim 7 wherein the inductance of the first main-phase filter inductor is approximately 500 nanohenries.

9. (Original) The power supply of claim 7 wherein the inductance of the fist transient-phase inductor is approximately 50 nanohenries.

10. (Original) The power supply of claim 7 wherein the inductance of the fist transient-phase inductor is approximately 5 nanohenries.

11. (Original) The power supply of claim 7 wherein:

the main-phase drive circuit has an on time and an off time; and

the transient-phase drive circuit has an on time and an off time that are respectively less than the on and off times of the main-phase drive circuit.

12. (Original) The power supply of claim 7, further comprising a circuit operable to pulse-width modulate the main-phase and transient-phase drive circuits.

13. (Currently Amended) An electronic system comprising:

a power supply comprising,

an output node operable to provide a regulated supply voltage,

a main-phase drive circuit operable to provide a main load current to the output node and having an on time and an off time that are ~~based on~~ determined by a feedback signal ~~that is related to~~ generated from the regulated supply voltage,

a transient-phase drive circuit operable to provide a transient load current to the output node and having an on time and an off time that are ~~based on~~ determined by the same feedback signal and that are respectively less than the on and off times

and off times of the main-phase drive circuit; and

an electronic component having a voltage supply node coupled to the output node of the power supply.

14. (Currently Amended) A method for powering a load, the method comprising:

switching a first current to a load at a first rate and for a first time ~~in response to~~ determined by a feedback signal ~~that is related to~~ generated from a voltage across the load; and

switching a second current to the load at a second rate and for a second time ~~in response to~~ determined by a change in the same feedback signal, the second rate being higher than the first rate, the second time being shorter than the first time.

15. (Original) The method of claim 14 wherein:

switching the first current comprises switching the first current to the load when a voltage across the load strays from a first predetermined range; and

switching the second current comprises switching the second current to the load when the voltage across the load strays from a second predetermined range that is larger than and includes the first predetermined range.

16. (Previously Presented) A method for powering a load, the method comprising:

switching a first current to a load at a first rate and for a first time;

switching a second current to the load at a second rate and for a second time in response to a change in the load, the second rate being higher than the first rate, the second time being shorter than the first time; and

switching a third current to the load at a third rate and for a third time in response to a change in the load, the third rate being higher than the first rate and lower than the second rate, the third time being shorter than the first time and longer than the second time.

17. (Original) The method of claim 14 wherein:

switching the first current comprises switching the first current through a first inductor; and

switching the second current comprises switching the second current through a second inductor that has a smaller inductance than the first inductor.

18. (Original) The method of claim 14, further comprising filtering the first current with a first inductor and filtering the second current with a second inductor, the first inductor having an inductance an order of magnitude greater than the inductance of the second inductor.

19. (Previously Presented) A method for powering a load, the method comprising:

switching a first current to a load at a first rate and for a first time;

switching a second current to the load at a second rate and for a second time in response to a change in the load, the second rate being higher than the first rate, the second time being shorter than the first time; and

switching a third current to the load at a third rate and for a third time in response to a change in the load, the third rate being higher than the second rate, and the third time being shorter than the second time.

20. (Previously Presented) A power supply, comprising:

an output node operable to provide a regulated supply voltage;

a main-phase drive circuit operable to provide a main load current to the output node and having an on time and an off time;

a first transient-phase drive circuit operable to provide a first transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the main-phase drive circuit; and

a second transient-phase drive circuit operable to provide a second transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the first transient-phase drive circuit.

21. (Previously Presented) The power supply of claim 1, further comprising a feedback circuit coupled to the output node and to the main-phase and transient-phase drive circuits and operable to generate the feedback signal from the regulated supply voltage.

22. (Previously Presented) An electronic system, comprising:

a power supply, comprising,

an output node operable to provide a regulated supply voltage,

a main-phase drive circuit operable to provide a main load current to the output node and having an on time and an off time,

a first transient-phase drive circuit operable to provide a first transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the main-phase drive circuit, and

a second transient-phase drive circuit operable to provide a second transient load current to the output node and having an on time and an off time that are respectively less than the on and off times of the first transient-phase drive circuit; and

an electronic component having a voltage supply node coupled to the output node of the power supply.

23. (Previously Presented) The method of claim 14 wherein the change in the feedback signal is caused by a change in the load.